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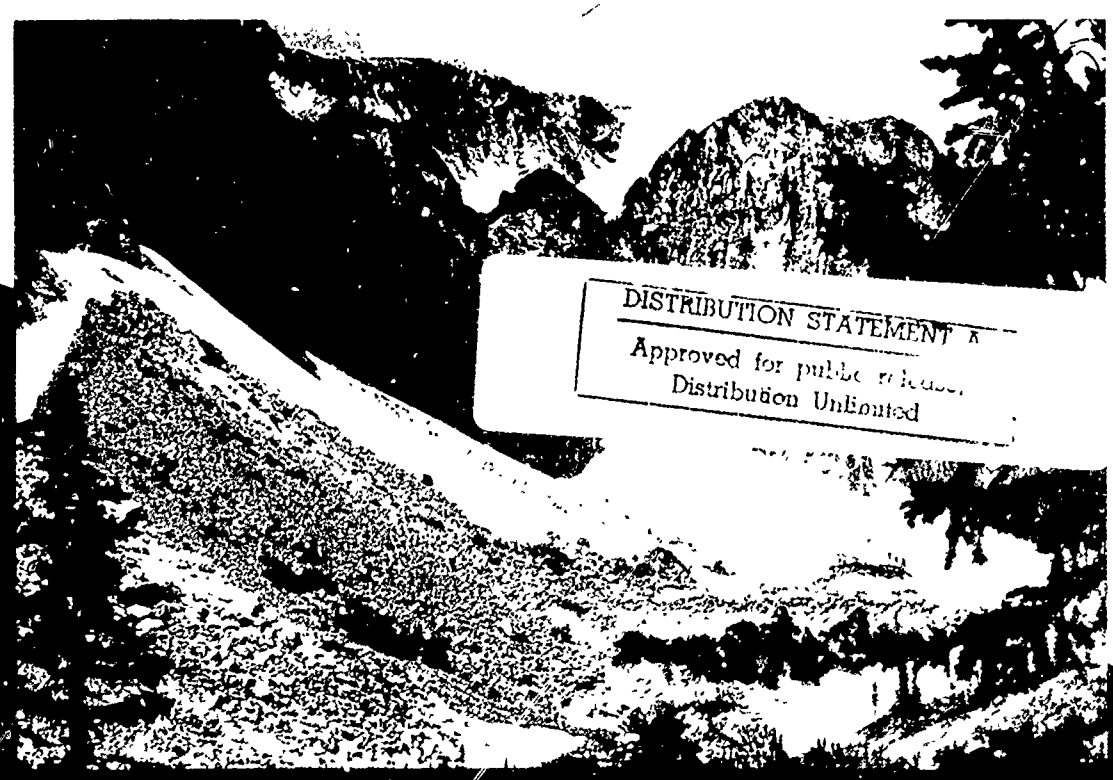

UNIVERSITY OF WYOMING

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scheduled for launch in 1982, did not have on-board tape recorder capability that would be required to support a POAM experiment without the buffer-memory. Realizing that this memory was critical to the POAM experiment, extensive breadboarding had been accomplished prior to the loss of flight opportunity. The memory design and breadboard effort indicated that significant expense and time was required to provide the on-board memory and that it would be highly desirable to eliminate the need for the memory in any future space ride opportunity.

With the cancellation of the flight opportunity it was realized that it would be desirable to concentrate any construction efforts for the POAM experiment in areas that were not critically dependent on the spacecraft interface or ride opportunity.

Since the detector system for the POAM experiment is a derivative of the PAM (Preliminary Aerosol Measurement) experiment that is currently flying on P78-1, a breadboard of a telescope and a detector assembly was constructed so that measurements could be made to demonstrate the integrity of the engineering enhancements that were required for the Host Vehicle. These engineering measurements have recently proved to be valuable in that they allowed for the rapid determination of the compatibility of the POAM optical system with a new space ride opportunity which is currently under consideration.

The detailed mounting for the optical head configuration that would be required for a new ride opportunity is critically dependent on orbital configuration and spacecraft configuration. Because of this, the only work that was accomplished on the optical head was the breadboard testing outlined above which has provided the engineering information that is

necessary to analyze the mounting requirements for future ride opportunity.

The electrical system interface with the optical head was reviewed and it was decided that most of this design would be compatible with a new ride opportunity. Since the detailed layouts and art work for the printed circuit boards required for these circuits had already been designed, it was decided that additional work for this part of the instrument should be discontinued until the details of the new ride opportunity had been completely defined.

Since the output section of any space instrument and the interface to the spacecraft is critically dependent on the configuration for a specific spacecraft, the work that had been done for the Host Vehicle ride version of the POAM instrument in the output section will probably not be of use for a new flight opportunity.

An important part of the POAM experiment is the ground support system that is required to accomplish testing and calibration of the instrument. Because of the additional channels that the POAM instrument has beyond what the PAM instrument had, the ground support equipment that had been constructed for the PAM experiment did not readily adapt itself for use in the POAM program. Since this equipment had been built using discrete components, modification was not possible. A new design for the ground support equipment for the POAM experiment was required. A portion of the new design required details of yet to be determined spacecraft interface. However, the major portion of the design parameters were determined by the POAM instrument requirements. In order to accomplish a design that would allow forward progress on the ground support equipment for POAM and at the same time provide the flexibility to allow the

system to be compatible with the spacecraft for a new flight opportunity, a microprocessor based system was chosen. This system then has the capability to allow, by software changes, for the spacecraft interface configuration and will allow for the POAM's instrument testing and calibration. Work progressed on a major portion of the design and construction was begun on the ground support equipment. At the end of the contract period, this system was in the process of undergoing preliminary tests.

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This report summarizes the progress made on the engineering definition of the POAM (Polar Ozone and Aerosol Measurement) Experiment.

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